2 Sheets—Sheet 1.

J. C. TODD.

Rope-Spinning Machinery.

No. 218,797. **Patented Aug. 19, 1879.**

Fig. I.

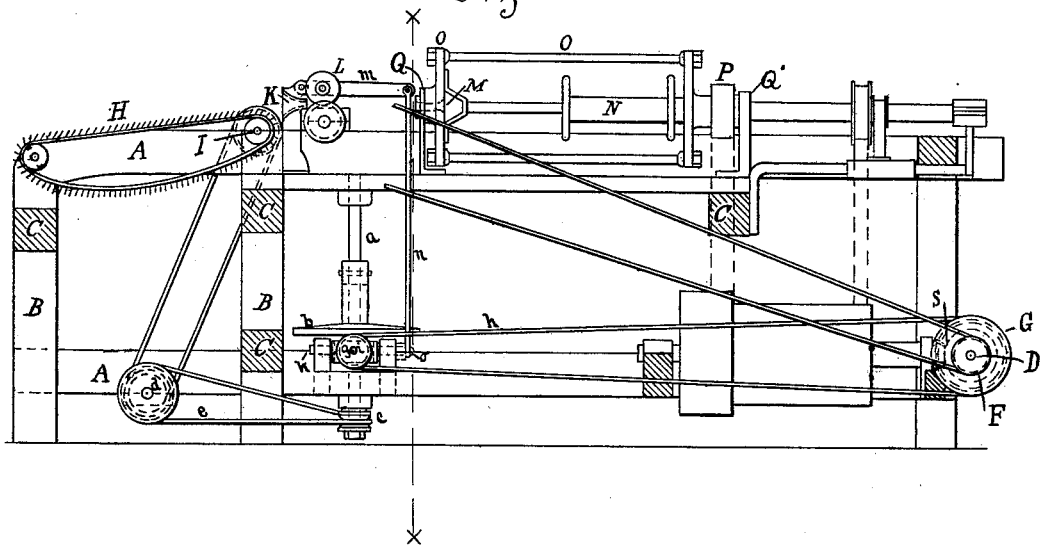


Fig. II.

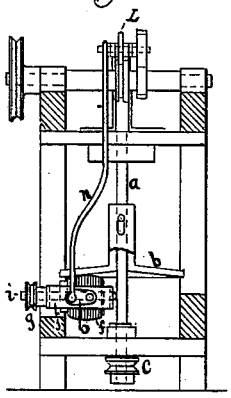


Fig. III.

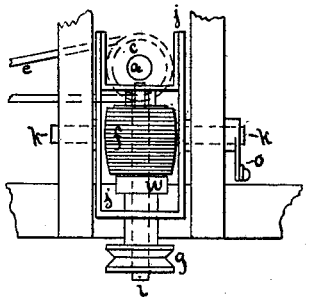
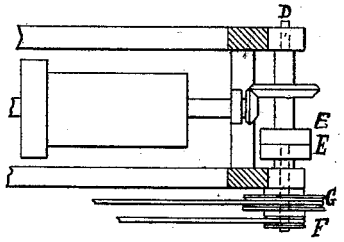


Fig. IV.



Attest.

Geo. H. Bodenschatz

E. P. Roberts

Inventor.

Joseph C. Todd, per

T. S. Crane, Atty.

2 Sheets—Sheet 2.

J. C. TODD.
Rope-Spinning Machinery.

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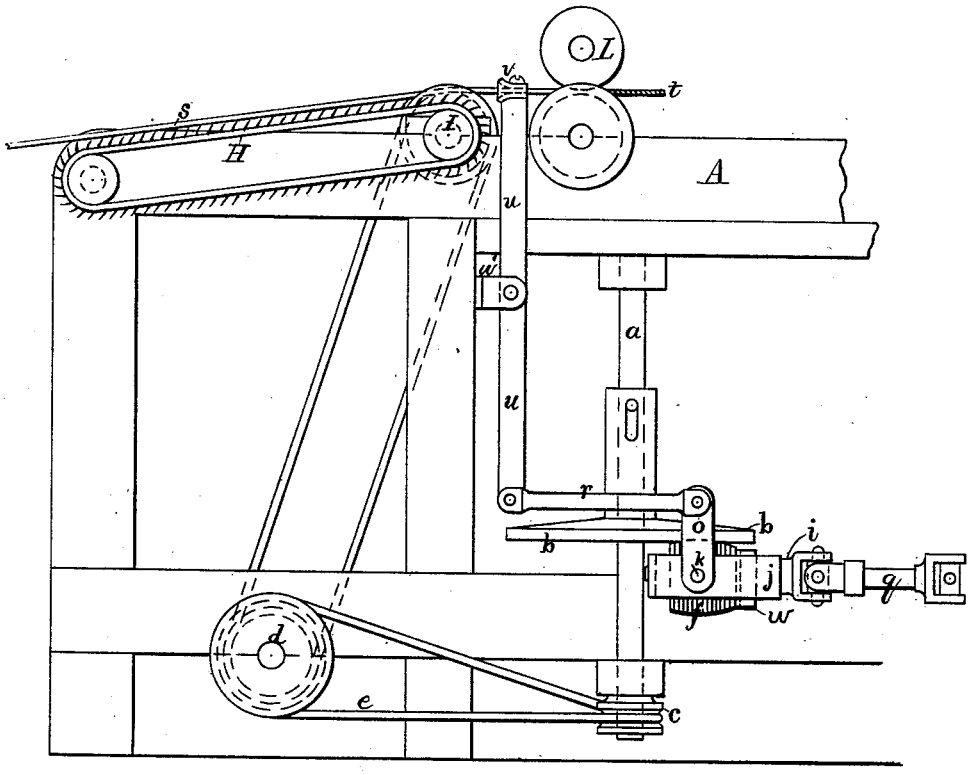
Fig V.



Attest:

Geo. H. Bodenschatz.

E. P. Roberts

Inventor.

Joseph C. Todd, Jun

T. S. Crane, Atty.

UNITED STATES PATENT OFFICE.

JOSEPH C. TODD, OF PATERSON, NEW JERSEY.

IMPROVEMENT IN ROPE-SPINNING MACHINERY.

Specification forming part of Letters Patent No. **218,797**, dated August 19, 1879; application filed June 25, 1879.

To all whom it may concern:

Be it known that I, JOSEPH C. TODD, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Rope-Spinning Machinery, which improvement is fully described in the following specification.

My invention relates to that class of devices which are applied to rope-spinning machinery for automatically regulating the size of the sliver or yarn.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

I am aware that a ratchet feed operated by two pawls has been connected with the condensing-rolls through which the sliver passes; but such a device produces but a single and abrupt change in the speed of the feeding device, while mine is capable of graduating the speed of the feed with the utmost nicety, and also of stopping it entirely if the feed is excessive.

The construction and arrangement of my friction-driver will be readily understood by reference to the annexed drawings, in which—

Figure 1 is a side view of a spinning-jenny with my improvement attached. Fig. 2 is a sectional view of the same, taken on line *x x*, Fig. 1. Fig. 3 is a plan of the regulating-roller and its tipping frame. Fig. 4 is a plan of the driving-shaft; and Fig. 5 is an enlarged view of a modification, showing the friction-driver as governed by a trumpet-guide.

In Fig. 1 the nearer frame of the machine is removed to show the construction more clearly.

A A are the side bars of the frame; B B, the post, and C C the cross-ties. D is the driving-shaft of the machine. E E are the fast and loose pulleys on the same. F is the pulley for driving the calender-rolls L, and G is the pulley for operating the friction-driver. H is the feeding-apron, driven by shaft I, and feeding the sliver *s*, through the conductor K, to the calender-rolls L.

From the calender-rolls L the twisted yarn or strand *t* (shown in Fig. 5) passes through the hole M in the flier O and onto the bobbin N, in the usual manner.

The end of the flier nearest the rolls L is supported by a standard, Q, and its outer end is carried by a standard, Q′, and provided with a pulley, P, to which motion is imparted in the usual way.

My invention having no connection with any other parts of the machine already in common use, no references are made thereto.

My improvement embraces the parts involved in transmitting the motion from the main shaft D to the feed-shaft I, and which are constructed as follows: Between the driving and feed shafts I locate an upright shaft, *a*, provided with a disk, *b*, and pulley *c*, the former serving to receive the motion through my friction-driver, and the latter to transmit it to the feed-shaft I.

The shaft *a* being vertical, and the feed-shaft I revolving horizontally, an intermediate shaft, *d*, is provided to change the direction of the motion by means of a twist-belt, *e*; or suitable gearing may be employed.

The disk *b* receives its motion from a friction-driver, *f*, which is secured to arbor *i* hung in a tipping or swing frame, *j*.

The arbor is shown in Figs. 1 to 3, provided with a pulley, *g*, which receives a cord or belt, *h*, from the pulley G on the main shaft, and the arbor and driver *f* are thus revolved at a uniform rate of speed.

The roller is shown as of convex outline at its point of contact with the disk, underneath which it is supported by frame *j*, the arbor *i* being radial to the shaft *a*.

From this arrangement it is evident that if the frame *j* be tipped out of a horizontal position the point of contact between the driver and the disk will be changed, and the motion imparted to the disk will be varied in its rate of speed.

The disk and its vertical shaft are so connected that its weight presses the disk constantly against the convex surface of the driving-roller *f*, and, the driver being made of leather, rubber, or other suitable material, the motion is transmitted at the desired rate of speed to the feed-shaft I.

To tip the frame *j* automatically, a connection is required to the calender-rolls L, so that as the sliver deviates from the proper or standard size the feed may be varied to correct the deviation. This may be done by a connection

to the calender-rolls through which the sliver passes, or by providing a trumpet-guide, as shown in Fig. 5, to operate the frame *j* as the sliver varies in size.

In Figs. 1 to 3 the frame is seen provided with a crank, *o*, connected to one of its trunnions, *k*, and a rod, *n*, is attached to the crank, to receive the motion from the upper calender-roll, L. The roll L is shown supported by two levers, *m*, the short arms of which are pivoted close to the roll, while the longer arms are jointed to the rod *n*, which thus receives a motion much greater than that produced in the roll L by the inequality of the sliver.

So long as the sliver passes under roll L uniformly, the roll and its supporting-lever *m* will remain unmoved; but any variation in the size of the sliver will produce a movement in the lever *m* and tip the frame *j*, to which it is connected by rod *n* and crank *o*.

The crank is so attached to the frame *j* that an increase in the mass of the sliver throws the outer end of the roller *f* in contact with the disk *b* near its periphery, and thus reduces the speed of the feed until the sliver regains its proper size.

Should the sliver elevate the roll L an excessive amount, the feed will be entirely arrested, as a loose pulley, *w*, is provided on the arbor *i* to come in contact with the disk when the extreme outer end of the driving-roller *f* fails to reduce the speed of the feed sufficiently, the loose pulley being placed on the arbor near the rim of the disk, and supporting it without transmitting any motion to the feed when the frame *j* is sufficiently tipped.

In Fig. 5 the frame *j* is shown controlled by a trumpet-guide, *v*, through which the sliver passes to the flier, and by which the variations in the sliver are caused to move the frame *j* as desired.

A lever, *u*, is hinged to the posts of the frame by fulcrum *u'*, so that its upper end carries the trumpet-guide *v*, and its lower end actuates a rod, *r*, connected to crank *o*. The lever being vertical, the crank *o* is secured to the trunnion *k* in a vertical position, and the movements of the lever *u* operate the frame *j* in the same manner as those of the levers *m*.

When thus arranged, the arbor *i* would be parallel with the side frames, A, and would require to be driven by some other means than the pulley *g*, as by a universal-joint coupling, *q*, connected in any suitable manner with the main shaft D.

From the above description it will be seen that the operation of the friction-driver is the same, however it may be connected to the sliver so as to act automatically, and I do not therefore limit myself to the sole use of the means described for making such connection.

Both the trumpet-guide and calender-rolls are intended to be adjustable, and arranged to pass a larger or smaller sliver, as may be desired, and the connections between them and the frame *j* may be made adjustable for the same purpose in any desired manner.

I do not consider it material to the operation of my invention how the friction-driver receives a uniform rate of motion from the main shaft D, nor that the roller *f* should be the driving agent in the frictional combination, as the uniform rate of motion might be imparted first to the disk *b*, and the variable motion transmitted by the roller *f* to the feed-shaft I, if preferred.

This feed-shaft I, which is the agent actuated by my improved regulator, may be employed to drive any kind of feeding-apron constructed to carry the fibers into the machine, and I do not therefore limit myself to any special construction for the said apron.

Having thus shown the essential parts of my invention to be the disk *b* and friction-roller *f*, automatically operated by the sliver, I claim the same, as follows:

1. The combination of the feed-apron H, the calender-rolls L or trumpet-guide *v*, with the disk *b*, the frame *j*, the friction-roller *f*, and connecting and operating mechanism, substantially as described, whereby the feed is regulated according to the variations in the sliver, as set forth.

2. The combination of the friction-roller *f*, the loose pulley *w*, the arbor *i*, and combining and operating mechanism, substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereto subscribe my name in the presence of two witnesses.

J. C. TODD.

Witnesses:
THOS. S. CRANE,
EDWD. L. SANGSTER.